

WHAT IS CLAIMED IS:

1                   1.       A method for repositioning teeth in a patient, said method comprising:  
2                   applying force to at least one tooth in a jaw of the patient, and  
3                   administering a tissue remodeling and/or an angiogenic substance(s) to the  
4                   patient to promote remodeling of periodontal tissue surrounding a root of the tooth.

1                   2.       A method as in claim 1, wherein the substance(s) comprises relaxin or  
2                   an analog or mimetic thereof.

1                   3.       A method as in claim 1 wherein the substance(s) comprises an  
2                   substance(s) selected from the group consisting of VEGF, bFGF, estrogen, nitrous oxide,  
3                   naltrexone, and collagenase.

4                   4.       A method as in claim 3, wherein the substance(s) further comprise  
5                   relaxin or an analog or mimetic thereof.

6                   5.       A method as in claim 1, wherein administering the substance(s)  
7                   comprises administering the substance(s) before the force is applied.

1                   6.       A method as in claim 1, wherein administering the substance(s)  
2                   comprises administering the substance(s) while the force is being applied.

1                   7.       A method as in claim 1, wherein administering the substance(s)  
2                   comprises administering the substance(s) after the force has been applied.

1                   8.       A method as in claim 1, wherein applying force comprises providing  
2                   the patient with a removable appliance.

1                   9.       A method as in claim 8, wherein the removable appliance comprises a  
2                   reservoir which releases the substance(s) to the gingiva of the patient.

1                   10.     A method as in claim 8, wherein the removable appliance is selected  
2                   from the group consisting of positioners, aligners, and retainers.

1                   11.     A method as in claim 1, wherein applying force comprises adjusting  
2                   wire and bracket appliances on the teeth.

- 1                    12.     A method as in claim 1, wherein applying force comprises positioning  
2     an appliance between one or more anchor teeth and one or more target teeth to be moved.
- 1                    13.     A method as in claim 12, wherein the substance(s) is preferentially  
2     applied to the periodontal tissue surrounding the one or more target teeth while the force is  
3     being applied to said target teeth.
- 1                    14.     A method as in claim 1, wherein administering the substance(s)  
2     comprises administering the substance(s) systemically.
- 1                    15.     A method as in claim 1, wherein administering the substance(s)  
2     comprises administering the substance(s) locally to the tissue surrounding the root of the  
3     tooth.
- 1                    16.     A method as in claim 15, wherein administering the substance(s)  
2     locally comprises topical delivery of the substance(s) on the gingiva near the tooth.
- 1                    17.     A method as in claim 15, wherein topical delivery comprises releasing  
2     the substance(s) from a controlled release device engaged against the gingiva.
- 1                    18.     A method as in claim 15, wherein topical delivery comprises spreading  
2     a fluid substance(s) over the gingiva.
- 1                    19.     A method as in claim 15, wherein administering the substance(s)  
2     comprises injecting the substance(s) into the tissue surrounding the root.
- 1                    20.     A method as in claim 1, further comprising applying an electric current  
2     to the periodontal tissue surrounding the root.
- 1                    21.     A method as in claim 20, wherein the applied current has a current  
2     density in the range from  $0.5 \mu\text{A}/\text{mm}^2$  to  $6 \mu\text{A}/\text{mm}^2$ .
- 1                    22.     An improved orthodontic treatment method of the type wherein force  
2     is applied to at least one tooth in a patient jaw to reposition said tooth, wherein the  
3     improvement comprises administering a tissue remodeling and/or an angiogenic substance(s)  
4     to the patient before, during, or after the force has been applied.

- 1                   23.     An improved method as in claim 22, wherein the substance(s)  
2 comprises relaxin or an analog or mimetic thereof.
- 1                   24.     An improved method as in claim 22, wherein the substance(s)  
2 comprises a substance(s) comprises relaxin or an analog or mimetic thereof.
- 1                   25.     An improved method as in claim 24, wherein the substance(s) further  
2 comprise relaxin or an analog or mimetic thereof.
- 1                   26.     An improved method as in claim 22, wherein administering the  
2 substance(s) comprises administering the substance(s) before the force is applied.
- 1                   27.     An improved method as in claim 22, wherein administering the  
2 substance(s) comprises administering the substance(s) while the force is being applied.
- 1                   28.     An improved method as in claim 22, wherein administering the  
2 substance(s) comprises administering the substance(s) after the force has been applied.
- 1                   29.     A method as in claim 22, wherein applying force comprises providing  
2 the patient with a removable appliance.
- 1                   30.     A method as in claim 29, wherein the removable appliance comprises a  
2 reservoir which releases the substance(s) to the gingiva of the patient.
- 1                   31.     A method as in claim 29, wherein the removable appliance is selected  
2 from the group consisting of positioners, aligners, and retainers.
- 1                   32.     A method as in claim 22, wherein applying force comprises adjusting  
2 wire and bracket appliances on the teeth.
- 1                   33.     An improved method as in claim 22, wherein applying force comprises  
2 positioning an appliance between one or more anchor teeth and one or more target teeth to be  
3 moved.
- 1                   34.     An improved method as in claim 33, wherein the substance(s) is  
2 preferentially applied to the periodontal tissue surrounding the one or more target teeth while  
3 the force is being applied to said target teeth.

1                   35.     An improved method as in claim 22, wherein administering the  
2 substance(s) comprises administering the substance(s) systemically.

1                   36.     An improved method as in claim 22, wherein administering the  
2 substance(s) comprises administering the substance(s) locally to the tissue surrounding the  
3 root of the tooth.

1                   37.     An improved method as in claim 36, wherein administering the  
2 substance(s) locally comprises topical delivery of the substance(s) on the gingiva near the  
3 tooth.

1                   38.     An improved method as in claim 36, wherein topical delivery  
2 comprises releasing the substance(s) from a controlled release device engaged against the  
3 gingiva.

1                   39.     An improved method as in claim 36, wherein topical delivery  
2 comprises spreading a fluid substance(s) over the gingiva.

1                   40.     An improved method as in claim 36, wherein administering the  
2 substance(s) comprises injecting the substance(s) into the tissue surrounding the root.

1                   41.     A method as in claim 22, further comprising applying an electric  
2 current to the periodontal tissue surrounding the root.

1                   42.     A method as in claim 41, wherein the applied current has a current  
2 density in the range from  $0.5 \mu\text{A}/\text{mm}^2$  to  $6 \mu\text{A}/\text{mm}^2$ .

1                   43.     An oral substance(s) delivery appliance comprising:  
2 a structure mountable on or over at least a portion of a patient's gingiva; and  
3 a tissue remodeling and/or an angiogenic substance(s) carried by the structure  
4 so that said substance(s) is released into at least a region of the gingiva when the structure is  
5 mounted on or over the gingiva.

1                   44.     An oral delivery appliance as in claim 43, wherein the structure mounts  
2 over the gingiva of an entire jaw.

1                   45.     An oral delivery appliance as in claim 43, wherein the structure mounts  
2 over the gingiva of less than the entire jaw.

1                   46.     An oral delivery appliance as in claim 45, wherein the structure mounts  
2 over the gingiva adjacent the roots of from one to five individual teeth.

1                   47.     An oral delivery appliance as in claim 43, wherein the structure  
2 comprises a patch.

1                   48.     An oral delivery appliance as in claim 43, wherein the structure  
2 comprises a shell which is removably placeable over the teeth.

1                   49.     An oral delivery structure as in claim 43, wherein the structure  
2 comprises a porous structure which releases the substance(s) at a controlled rate over time.

1                   50.     An oral delivery structure as to claim 43, wherein the substance(s) is  
2 present in a matrix which degrades over time in the oral environment.

1                   51.     A topical oral composition, said composition comprising:  
2 a carrier which may be topically applied to a patient's gingiva, and  
3 a tissue remodeling and/or an angiogenic substance(s) in the carrier, wherein  
4 the substance(s) releases into gingival tissue when the composition is topically applied to the  
5 gingiva.

1                   52.     A topical oral composition as in claim 49, wherein the carrier is a gel.

1                   53.     A topical oral composition as in claim 49, wherein the substance(s)  
2 comprises relaxin or an analog or mimetic thereof.

1                   54.     A topical oral composition as in claim 49, wherein the substance(s)  
2 comprises an angiogenic substance(s) selected from the group consisting of VEGF, bFGF,  
3 estrogen, nitrous oxide and naltrexone.

1                   55.     A topical oral composition as in claim 49, wherein the substance(s)  
2 further comprise relaxin, a mimetic or an analog thereof.

1                   56.     A method for enhancing tooth mobility or stability, said method  
2 comprising administering a tissue remodeling and/or angiogenic substance(s) to a living host.

1                   57.     A method as in claim 56, wherein the host will be having, is having, or  
2     has had orthodontic treatment.

1                   58.     A method as in claim 56, wherein the substance(s) comprises relaxin or  
2     an analog or mimetic thereof.

1                   59.     A method as in claim 56, wherein the substance(s) comprises an  
2     angiogenic substance(s) selected from the group consisting of VEGF, bFGF, estrogen, nitrous  
3     oxide and naltrexone.

1                   60.     A method as in claim 54, wherein the substance(s) further comprise  
2     relaxin or an analog or mimetic thereof.

1                   61.     A method as in claim 56, wherein administering the substance(s)  
2     comprises administering the substance(s) before the force is applied.

1                   62.     A method as in claim 56, wherein administering the substance(s)  
2     comprises administering the substance(s) while the force is being applied.

1                   63.     A method as in claim 56, wherein administering the substance(s)  
2     comprises administering the substance(s) after the force has been applied.

1                   64.     A method as in claim 56, wherein applying force comprises providing  
2     the patient with a removable appliance.

1                   65.     A method as in claim 64, wherein the removable appliance comprises a  
2     reservoir which releases the substance(s) to the gingiva of the patient.

1                   66.     A method as in claim 64, wherein the removable appliance is selected  
2     from the group consisting of positioners, aligners, and retainers.

1                   67.     A method as in claim 56, wherein applying force comprises adjusting  
2     wire and bracket appliances on the teeth.

1                   68.     A method as in claim 56, wherein applying force comprises  
2     positioning an appliance between one or more anchor teeth and one or more target teeth to be  
3     moved.

1                   69.     A method as in claim 68, wherein the substance(s) is preferentially  
2 applied to the periodontal tissue surrounding the one or more target teeth while the force is  
3 being applied to said target teeth.

1                   70.     A method as in claim 56, wherein administering the substance(s)  
2 comprises administering the substance(s) systemically.

1                   71.     A method as in claim 56, wherein administering the substance(s)  
2 comprises administering the substance(s) locally to the tissue surrounding the root of the  
3 tooth.

1                   72.     A method as in claim 71, wherein administering the substance(s)  
2 locally comprises topical delivery of the substance(s) on the gingiva near the tooth.

1                   73.     A method as in claim 71, wherein topical delivery comprises releasing  
2 the substance(s) from a controlled release device engaged against the gingiva.

1                   74.     A method as in claim 71, wherein topical delivery comprises spreading  
2 a fluid substance(s) over the gingiva.

1                   75.     A method as in claim 71, wherein administering the substance(s)  
2 comprises injecting the substance(s) into the tissue surrounding the root.

1                   76.     A method as in claim 56, further comprising applying an electric  
2 current to the periodontal tissue surrounding the root.

1                   77.     A method as in claim 76, wherein the applied current has a current  
2 density in the range from  $0.5 \mu\text{A}/\text{mm}^2$  to  $6 \mu\text{A}/\text{mm}^2$ .

1                   78.     Relaxin or an analog or mimetic thereof for use in the manufacture of a  
2 composition for topical delivery to the gingiva to promote tooth mobility and/or stability.